

# En Route Arrival Clearances

*Altitude awareness is especially important where the Center provides approach control services.*

By Wally Roberts

THERE SEEMS TO BE CONTINUING controversy and confusion about some non-radar arrivals. In my article, "When Are You A Non-Radar Arrival?" (August, 1995 *IFRR*), a comment I made set off a discussion on the Internet rec.aviation.ifr newsgroup. That discussion is still active as of this writing.

In the article, I used Gunnison, CO as one of my example airports. Gunnison is in the heart of the Rocky Mountains, and Denver Center provides IFR terminal services in place of a dedicated approach control facility. At such airports, Center radar coverage of the terminal area at MEAs and below is typically marginal to nonexistent. It isn't unusual for a Center to issue an approach clearance while the aircraft is flying along a previously cleared victor airway.

I stated in the article: "*Special attention must be paid to the complex MEA structure of airways in mountainous areas, such as Gunnison. If you're cleared for the approach while still on an airway, ATC has no obligation to provide you with an altitude since you're on a published route. Carefully select the applicable minimum altitude for your position on the airway, with particular caution in selecting the correct MEA for your direction of flight. You should be on speed and minimum altitude when departing the en route structure on to either a feeder route or an initial approach segment, but not at the expense of busting a minimum altitude.*"

### Firestorm of sorts

This text created a firestorm of discussion from: when do you have to start descent; to, can you climb after receiving such an approach clearance? There was even mixing of regulatory apples with oranges by one person, who kept citing references from FAR 91.175 (i), "Operations on unpublished routes and use of radar in instrument approach procedures." This one person went so far as to write the FAA about the application of FAR 91.175 (i) when receiving an approach clearance while on an airway, and **almost** sucked the FAA into making an incorrect AIM change. This would have placed the AIM squarely

at odds with FAR 91.175 (i) as it pertains to off-route clearances.

The FAA reacted incorrectly for two reasons: lack of agency corporate memory as to the genesis of FAR 91.175 (i), and the failure to internally coordinate flight standards policies with air traffic policies. There is a moral in all of this: if the FAA is this disjointed in 1996 (and it is), the burdens placed upon pilots to be diligent and cautious have never been greater than today. This is particularly true when shifting from the warm, fuzzy world of full-radar approach control service to outlying airports with Center-provided terminal area services. Add to this the rush of hurriedly drawn up stand-alone GPS approach procedures, with inconsistent tie-ins to the non-GPS en route structure, and **abundant caution** is the watch-phrase of the day.

### Genesis of FAR 91.175 (i)

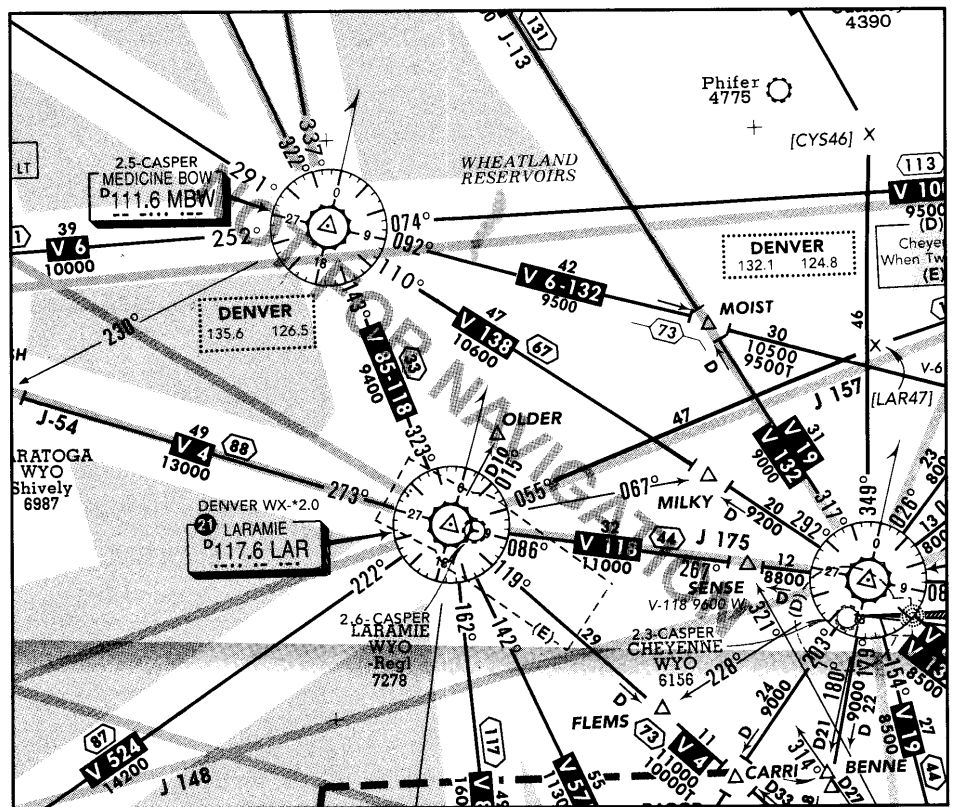
FAR 91.175 (i) came into existence in

1975, on the heels of the TWA 514 crash near Dulles Airport (which occurred in December, 1974). The regulation was added to restrict a descent after receiving an approach clearance when operating *off* a published route. Nothing changed, however, with respect to receiving an approach clearance when *on* a published route. There simply is no regulation, per se, that deals with the latter instance, other than the charted procedures themselves. If you're on a victor airway when cleared for an approach, the low-altitude chart is the charted "procedure" until you arrive at either the appropriate feeder fix or IAF.

### Center approach clearance

Normally, where the Center is providing terminal area services, the controller won't issue an approach clearance until there's no conflicting IFR traffic. In some circumstances, the controller might issue an alti-

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**Figure 1.** You're over MBW and are cleared to LAR VOR via V-85. Ten miles southeast of MBW, Center says, "cleared approach." Since you have a choice of two approaches (Figures 2 & 3), you must select the approach and transition at the proper altitude.

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## En Route Arrival...

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tude restriction until crossing some fix or facility. Generally, though, the clearance will simply state, "Cleared for the XXX approach" or simply, "Cleared approach" (see AIM 5-4-7d and *Pilot/Controller Glossary*). In either case, descent is authorized at pilot's discretion, in accordance with the applicable charted minimum altitudes.

At this point, I'll add what I probably should have included in the August article: *Upon receiving an "on route" approach clearance, and before descending to the MEA for your present location, inspect the route ahead, through to the IAF, to ensure you won't encounter a subsequent higher minimum altitude (MEA or initial approach segment altitude).* An approach clearance isn't authorization to climb above the previously assigned altitude, unless there's a regulatory requirement to make such a climb, i.e., while proceeding towards the IAF you subsequently encounter a minimum altitude higher than the previously assigned altitude.

If the Center controller is providing the best service, he/she won't issue an approach clearance without an altitude restriction to cover a subsequently higher MEA. Controllers are human, however, and can miss this type of subtle trap. The pilot is ultimately responsible to operate at the minimum safe altitude required by regulation.

### Evolution of off-route altitudes

What further confuses the issues are corruption of ATC altitude assignment practices, which have evolved in the interests of system expediency. As radar came into general use, controllers at first were limited to substituting published altitudes with only minimum vectoring altitude (MVA) altitudes. Then, the MVA concept for centers was replaced with the minimum instrument altitude (MIA) concept, in that controllers could use sectorized MVA-type altitudes with or without radar. ATC procedures were established to permit controllers to clear aircraft along federal airways below the MEA, but not below the MOCA, provided radar surveillance of the aircraft were maintained.

### Pilot responsibilities

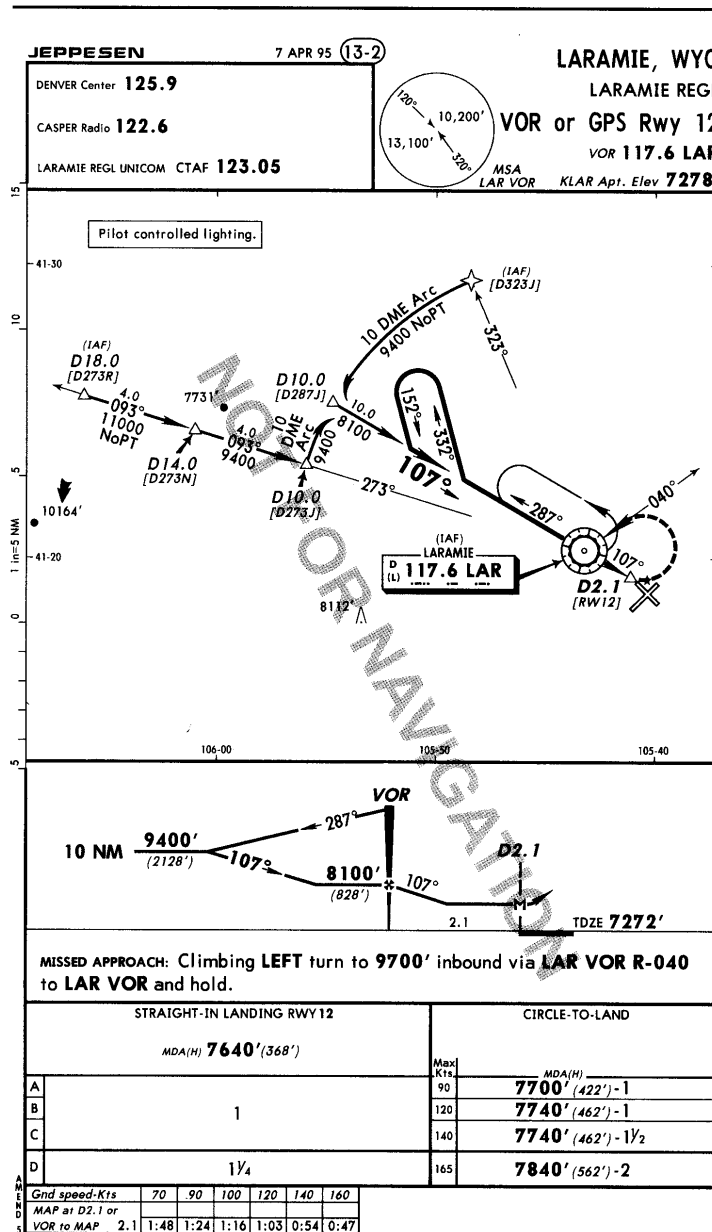
All of these serve to erode pilot authority (but not responsibility) for operating at safe

and legal IFR altitudes. The last item, especially, has been corrupted where we routinely receive clearances below the MEA of a federal airway where no published MOCA exists. Instead, the controller uses either the MIA (center) or MVA (approach control). As a matter of regulation (FAR 95), a federal airway simply doesn't exist below its published MEA or MOCA. I'm not suggesting that anyone mount a campaign against these "expediency" practices, but be careful.

The bottom line to this discussion is:

watch out if you're in unfamiliar or mountainous territory. When there's the slightest doubt, challenge any off-route or below published minimum altitude clearance. If you think you're getting a radar vector, but aren't absolutely certain, ask: "Is this a radar vector?" There are radar vectors, there are radar monitors, and there are direct clearances using either radar or non-radar MIAs. Further, there are sometimes ambiguities created when the pilot makes the request for a direct-routing clearance, and

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**Figure 2.** When flying this approach from V-85, you can either intercept the 10 DME arc, or fly to the VOR and track outbound for the procedure turn. Both initial altitude segments are 9,400 feet, which is the same as the MEA for V-85.

there are high rocks around. If in doubt, seek clarification!

### Case study

Refer to Figure 1 (page 5), which is from the en route chart for the Laramie, WY area. Let's say you've been cleared via V-85 from over MBW to LAR VOR, to maintain 13,000 feet. About 10 miles southeast of MBW, Denver Center says, "Piper 48C is cleared approach at Laramie Regional Airport. Contact Casper Radio now on 122.6." At this point, you can fly either of the two approaches for the airport (Figures 2 and 3), provided you're satisfied they aren't notam'd with some substantial adverse restriction.

(Don't count on ATC to hold your hand or even provide subtle notam or other operational restrictions, unless the procedure is fundamentally affected, such as an inoperative primary navaid. ATC simply doesn't know about FDC notams that raise minimums, or place other operational restrictions on the procedure. Nor is ATC familiar with the restrictions that chart notes might place on your particular operation.)

You've decided on the VOR or GPS Runway 12 approach (Figure 2, page 6). You review the en route chart and note that whether you elect the DME arc, or start from the VOR, both initial segment altitudes are 9,400 feet, which is the same as the MEA for V-85. But, what if you decide to fly the VOR-DME or GPS Runway 30 approach (Figure 3, on right)? In this case, you must start from over the VOR, and at an altitude of not less than 11,000 feet. So, it would be counterproductive to descend to 9,400 feet on V-85. What are the minimum climb requirements to get up to 11,000 feet, after crossing the VOR at 9,400 feet? The easy answer: the criteria simply don't anticipate such a requirement.

What if you had previously been assigned 10,000 feet on V-85 before getting cleared for the approach? In this case, the controller has arguably erred, but it's still up to you to depart LAR on the 112 radial at not less than 11,000 feet.

Let's say you fly the Runway 12 approach and end up missing at minimums. The missed takes you to 9,700 feet, which is too low to fly the Runway 30 approach. Not only do you need a new approach clearance to fly the Runway 30 approach after missing the Runway 12 approach, once you receive the new approach clearance, you must climb to 11,000 feet in the hold, before departing southeast on the 112

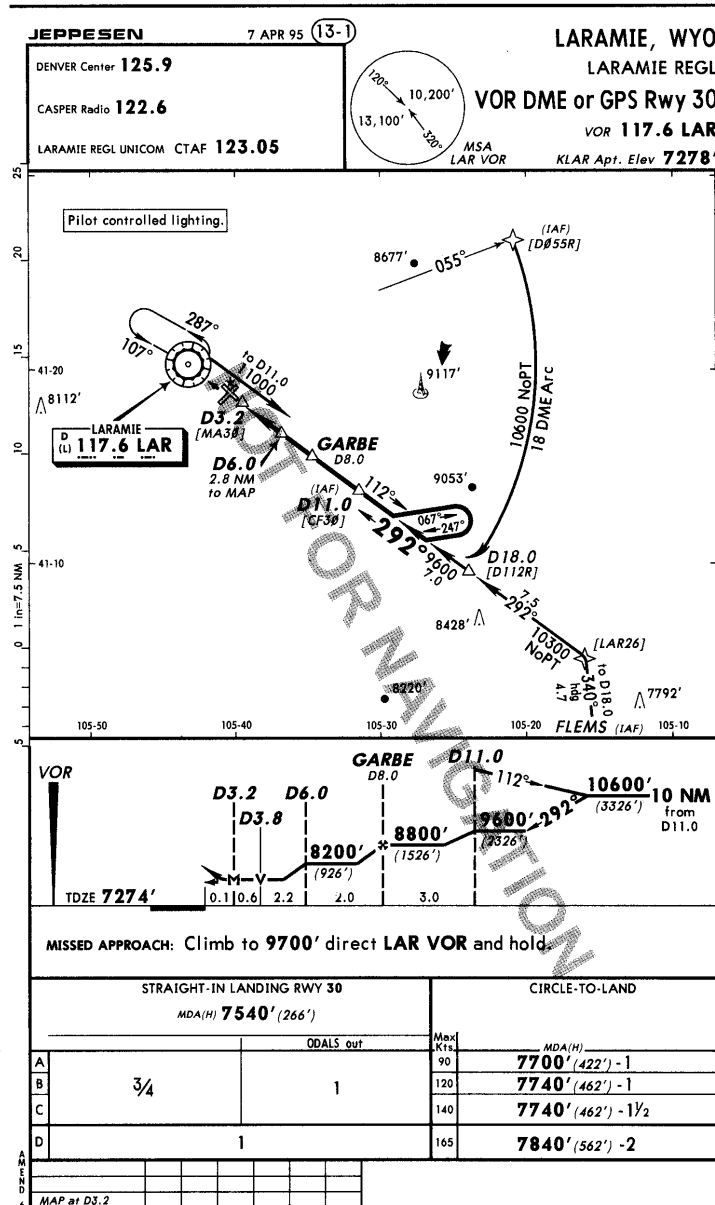
radial. ATC might, or might not, assist in these altitude requirements. In this situation, ATC has met its obligation by providing you with a new approach clearance following the missed approach.

### Summarizing the nuances

You, the pilot, always hold the final responsibility to operate at a safe altitude. When operating in areas of high terrain, you're literally betting your life on it. Keep in mind that ATC's primary mission is to move IFR traffic, while providing adequate

separation between IFR aircraft. Because of the TWA 514 crash, ATC picked up some additional responsibilities to help guard your altitude when operating off published routes. But, none of this applies to on-route operations. Add to this little, if any, other IFR traffic and the clearances can become deceptively "simple." All the information you need is on the charts. You might have to compare the en route chart to the approach chart, though, and one approach chart against another approach chart.

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**Figure 3.** When transitioning for this approach from V-85, cross the VOR at 11,000 feet or above. As you're proceeding down V-85, don't let ATC clear you below 11,000 feet if you want this approach. If you want to execute this approach after missing the Runway 12 approach, you must be re-cleared so you can climb to 11,000 feet.

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Be especially careful about the great differences that come into play when part-time approach control services go to sleep for the night. Casper, WY, Medford, OR, and Monterey, CA are three good examples. The procedures change radically when the tower and approach control close for the night.

### Unpublished route mix in the mountains

Of course, at some locations, the Center will provide radar vectors using the Center MIA in early stages of the terminal environment. The Center will sometimes use the Center MIA for non-radar direct routing. Keep in mind that this is all being done with a "fail-passive" 1930s communications system. While you might be accustomed to constant chatter on a busy approach control frequency as a reassuring reminder that the fragile com link is still there, what about the Center situation where you might be the only aircraft on frequency? Has it been quiet for the last two minutes because all is well, or has either your receiver or the Center's remote com-link failed? There's no red "off" flag to save us here. Again, it's up to you to keep a rational comfort level going with the com,

when the route and altitude are being provided from the ground.

### Adding GPS

A final word of caution about the flurry of new non-precision stand-alone GPS instrument approach procedures. This is all occurring at a time of reduction of force and reorganization of the procedures functions within the FAA. The experience level has never been lower within these FAA functions, and the corporate memory has mostly gone out the door with early retirement/buyouts, etc. Add to this the overwhelming pressures of Congress, isolated communities, and the aviation industry itself, to get the FAA to crank out the GPS stuff, almost to the point of no matter what.

Because there isn't any real GPS en route airspace system, these GPS IAPs stand by themselves. Sometimes they're provided with good ties to and from the en route structure, but in other instances they aren't. Be real careful about gaps in published altitudes between the en route published route structure and some GPS IAF waypoints. The only safeguard with such circumstances is ATC's MIAs or MVAs. With lost com, you're on your own. In other cases, a "cleared for the approach" clearance received when on a federal airway, although not triggering FAR 91.175 (i) in the controller's mind, might find you

with a subsequent unpublished gap between the airway and the most convenient GPS IAF. In such instances, it's up to you to be aggressively safe.

### Isolated procedures

There are isolated GPS missed approach procedures that sometimes end up in a holding pattern that isn't on a federal airway, doesn't tie to an airway, and has an altitude lower than the MEA of the nearest airways. What do you do under such circumstances? When communications are normal, question direct clearances from such missed approach holding fixes that have any appearance of being too low. If communications aren't normal, and you must find your own way back to a published route, exercise your emergency authority to climb to a safe altitude in the missed approach hold before moving on.

Of course, you must advise ATC of this action as soon as communications can be reestablished. Better charting of these new GPS approach procedures by the FAA would make this extraordinary diligence by the pilot unnecessary.

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